Fall Planning and Zoning Conference

"Wading Through Water Protection"

Southern New Hampshire &
Lakes Region Planning
Commissions

October 25, 2008

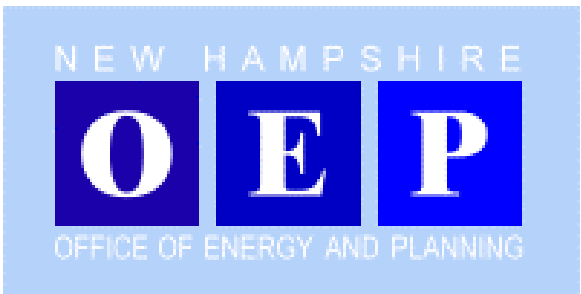
Presenters: Jack Munn, AICP, Chief Planner

& Erica Anderson, Senior Planner

Innovative Land Use Techniques:

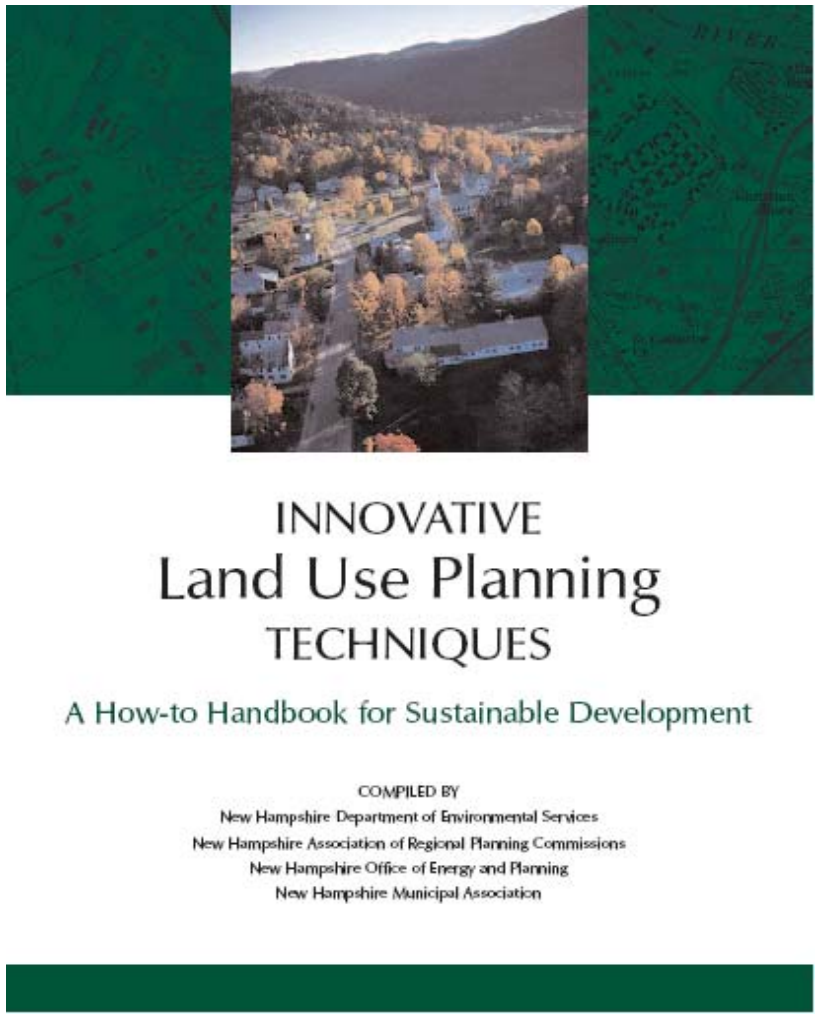
A Handbook for Sustainable Development

- Concept – provide guidance on 674:21
- ILU Handbook – use as reference tool
- Collaborative Effort



ILU Guide Contents

1. Multi-Density Zoning
2. Environmental Characteristics Zoning
3. Site-Level Design



Environmental Characteristics Zoning

- Stormwater Management
- **Ridgeline / Steep Slopes Development**
- Wildlife Habitat Management
- Water Resources Protection:
  - **Wetlands**
  - **Drinking water**
  - **Shoreline and Riparian areas**
  - **Floodplains**
  - **Erosion and sediment control**

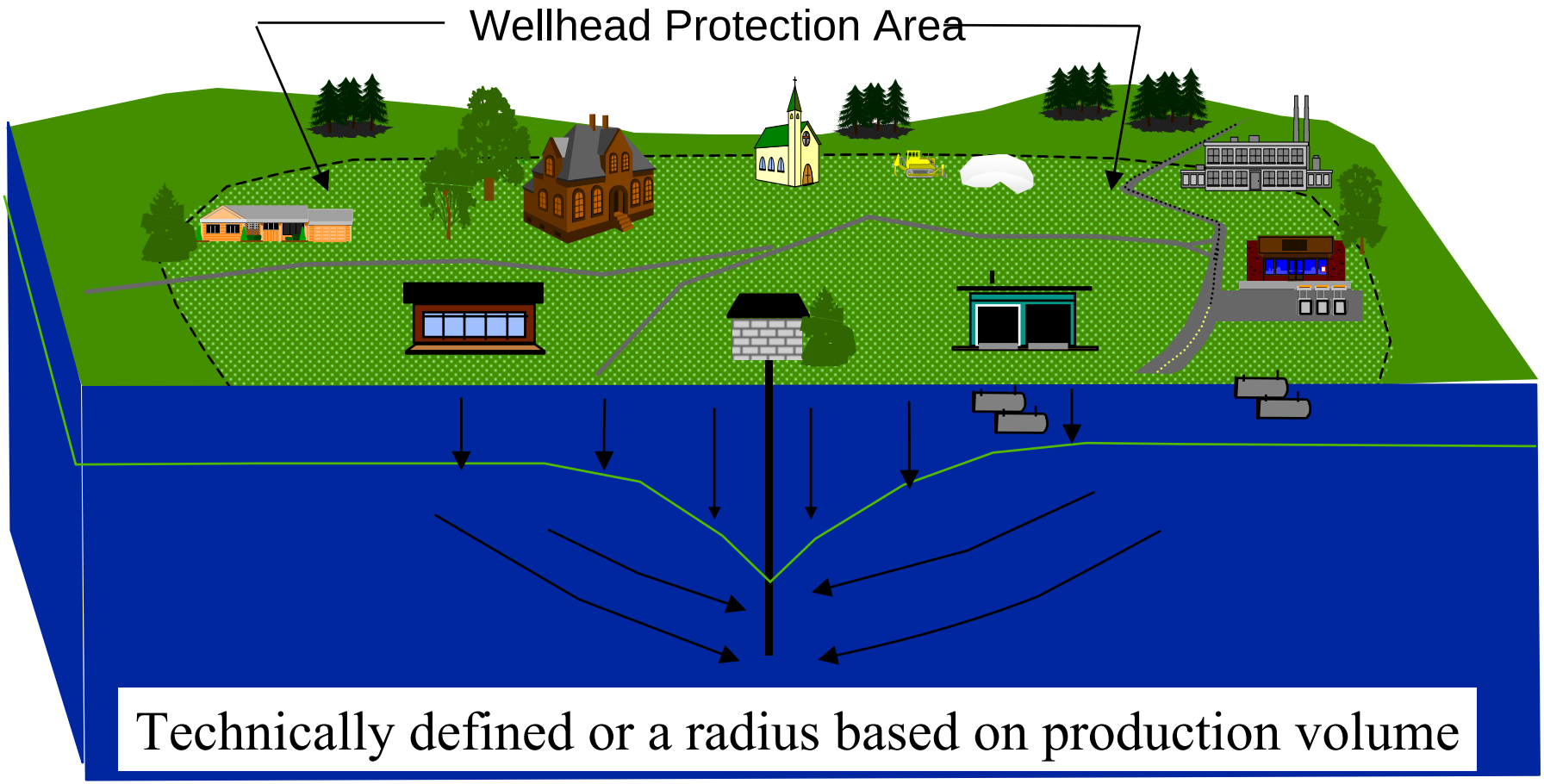
Model Ordinances for Today

- Drinking Water Protection
- Shoreland & Riparian Buffers
- Wetlands Protection
- Flood Hazard Area Zoning
- Steep Slopes Protection
- Erosion and Sedimentation Control

Model Drinking Water Protection Ordinance

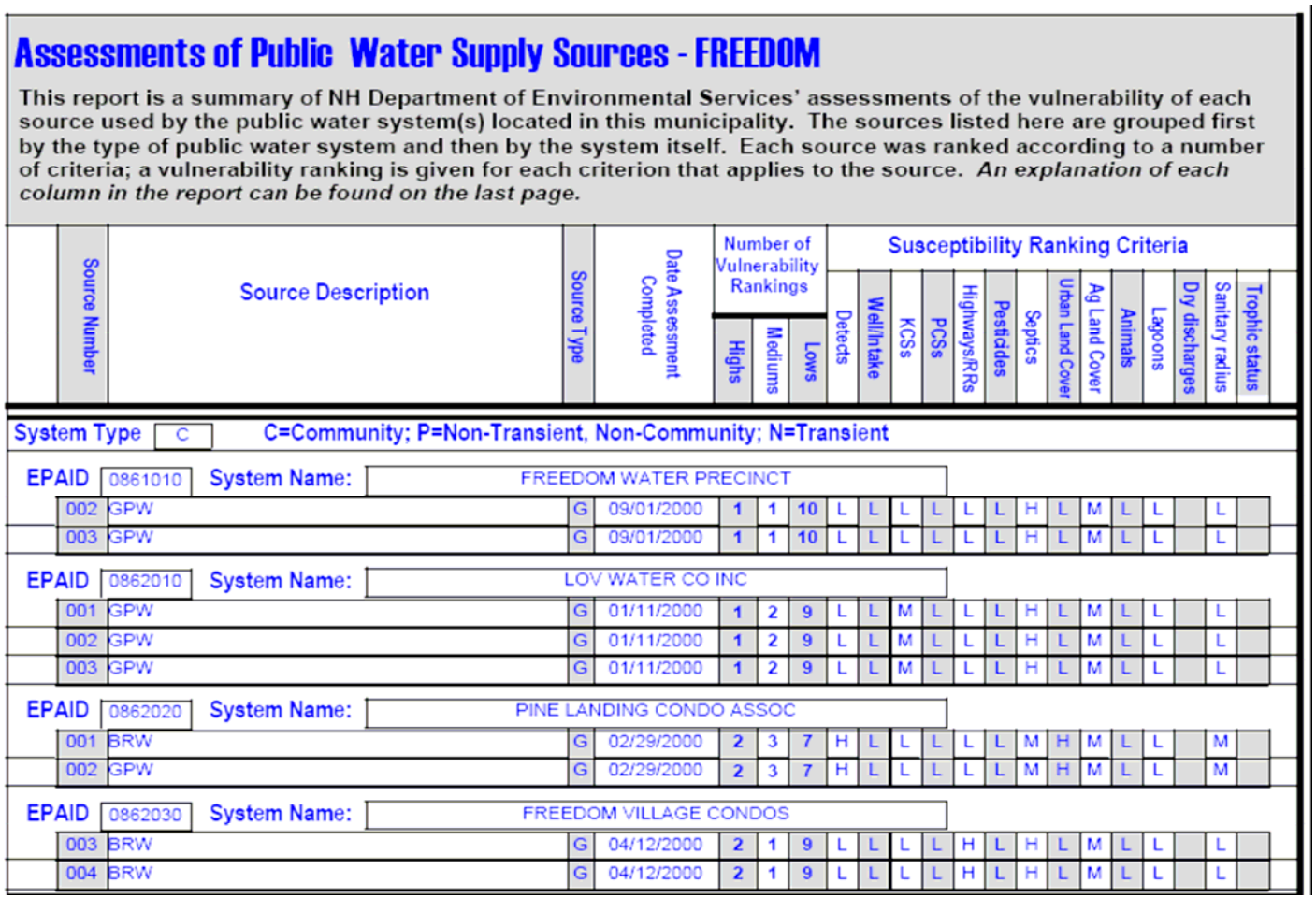
Applies to the Protection of Surface Water Supply Areas and Drinking Water Sources and Other Surface Waters which are Hydrologically Connected

Wellhead Protection Area



Source: NH DES

Source Water Assessment Reports



Assessments of Public Water Supply Sources - FREEDOM

This report is a summary of NH Department of Environmental Services' assessments of the vulnerability of each source used by the public water system(s) located in this municipality. The sources listed here are grouped first by the type of public water system and then by the system itself. Each source was ranked according to a number of criteria; a vulnerability ranking is given for each criterion that applies to the source. *An explanation of each column in the report can be found on the last page.*

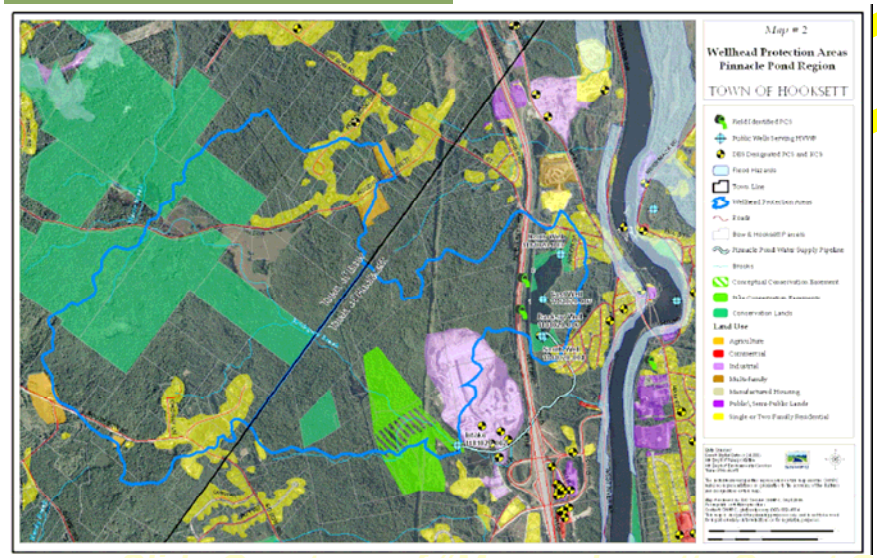
System Type C — C=Community; P=Non-Transient, Non-Community; N=Transient

Source Number	Source Description	Source Type	Date Assessment Completed	Number of Vulnerability Rankings: Highs	Mediums	Lows	Susceptibility Ranking Criteria: Detects	Well/Intake	KCSs	PCSs	Highways/RRs	Pesticides	Septics	Urban Land Cover	Ag Land Cover	Animals	Lagoons	Dry discharges	Sanitary radius	Trophic status
EPAID 0861010	System Name: FREEDOM WATER PRECINCT																			
002	GPW	G	09/01/2000	1	1	10	L	L	L	L	L	L	H	L	M	L	L		L	
003	GPW	G	09/01/2000	1	1	10	L	L	L	L	L	L	H	L	M	L	L		L	
EPAID 0862010	System Name: LOV WATER CO INC																			
001	GPW	G	01/11/2000	1	2	9	L	L	M	L	L	L	H	L	M	L	L		L	
002	GPW	G	01/11/2000	1	2	9	L	L	M	L	L	L	H	L	M	L	L		L	
003	GPW	G	01/11/2000	1	2	9	L	L	M	L	L	L	H	L	M	L	L		L	
EPAID 0862020	System Name: PINE LANDING CONDO ASSOC																			
001	BRW	G	02/29/2000	2	3	7	H	L	L	L	L	L	M	H	M	L	L		M	
002	GPW	G	02/29/2000	2	3	7	H	L	L	L	L	L	M	H	M	L	L		M	
EPAID 0862030	System Name: FREEDOM VILLAGE CONDOS																			
003	BRW	G	04/12/2000	2	1	9	L	L	L	L	H	L	H	L	M	L	L		L	
004	BRW	G	04/12/2000	2	1	9	L	L	L	L	H	L	H	L	M	L	L		L	

The Concept…

Establish a **Drinking Water Protection "Overlay" District** in your community's zoning ordinance

Drinking Water Source



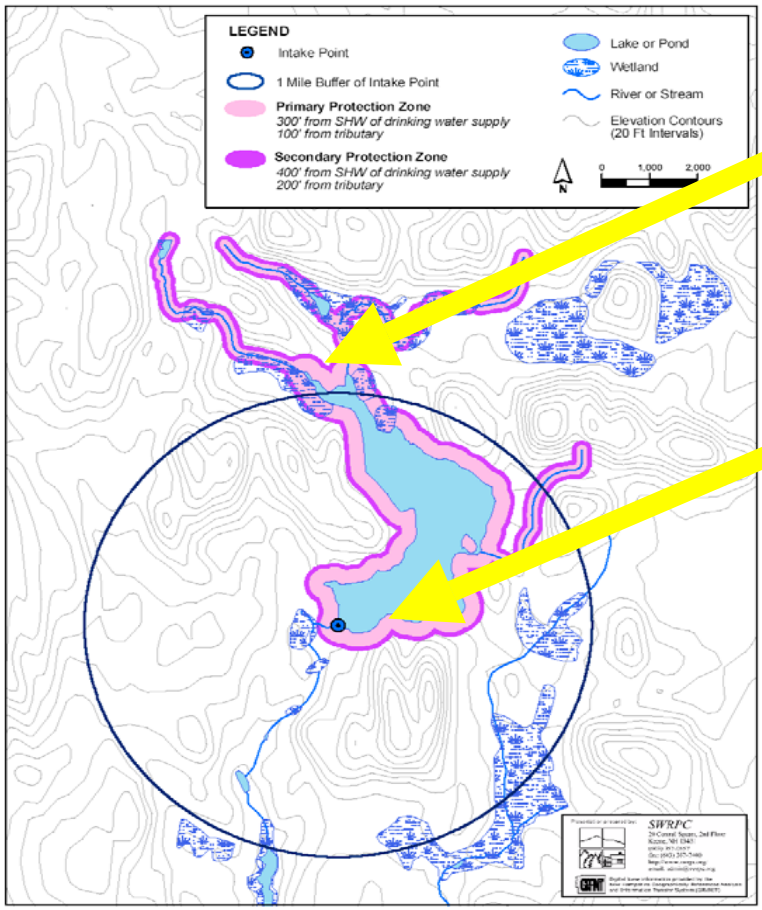
Drinking Water District

Utilize a watershed approach to ensure that all surface waters, groundwater and recharge areas for your community's drinking water source are protected

Slide Courtesy of "Massachusetts Smart Growth Toolkit." Published by Massachusetts EOEA

Essential Elements

Develop Primary and Secondary Buffer Protection Zone Requirements within the Drinking Water Protection District



Primary Buffer Zone:

Area within 300’ of seasonal high water mark of a waterbody actively used as a surface water supply and 100’ of reference line of all its contributing perennial tributaries

Secondary Buffer Zone:

Area between 300-400’ of seasonal high water mark of waterbody actively used as a surface water supply, and the area within 100-200’ of the reference line of all contributing perennial tributaries

Establish Use Restrictions

On Surface Waters used for drinking water within the Drinking Water Protection District - prohibit:

- Gasoline powered boats, snowmobiles, ATVs, etc.
- Hazardous waste/regulated substances
- Dumping of trash, refuse, etc.

In the Primary and Secondary Buffer Zones:

- Prohibit – hazardous waste, solid waste or sludge facility; salvage yard; snow dumps; wastewater lagoons; animal feedlots; petroleum terminals, gas stations, sewage disposal, livestock, commercial application – pesticides, herbicide & fertilizers;
- Permit – wildlife; outdoor recreation; bicycle paths/bridges; normal operation and maintenance of dams, etc.; agriculture, forestry, grazing, construction of wells, pipelines, etc.

Other Standards

- Conditional Use Permit Required:

  Land disturbances >10,000 sq.ft.; enlargement nonconforming uses; storage/handling of regulated substances

- Performance Standards Enforced Through:

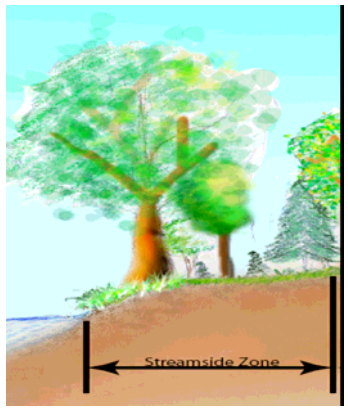
  Stormwater Management Plan

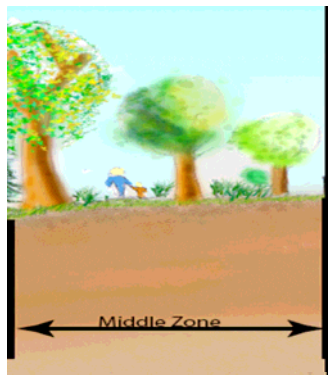
  Erosion & Sedimentation Control Plan

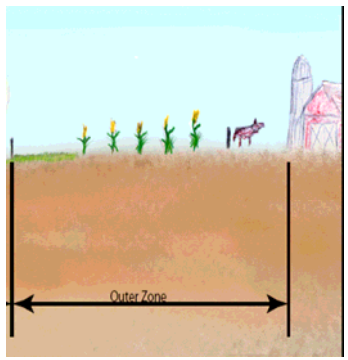
  Spill Prevention, Control and Countermeasure (SPCC) Plan

  Conforming to NH DES: Model Rule for the Protection of Water Supply Watersheds (2000) and Model Groundwater Protection Ordinance (2006)

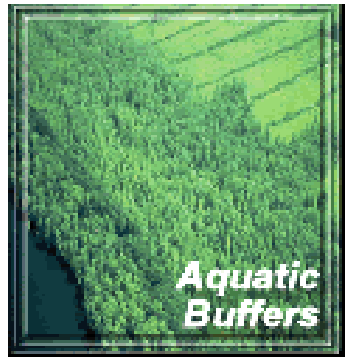
Model Ordinance for Shoreland & Riparian Area Protection







Municipalities Have a Choice in Shoreland Protection?



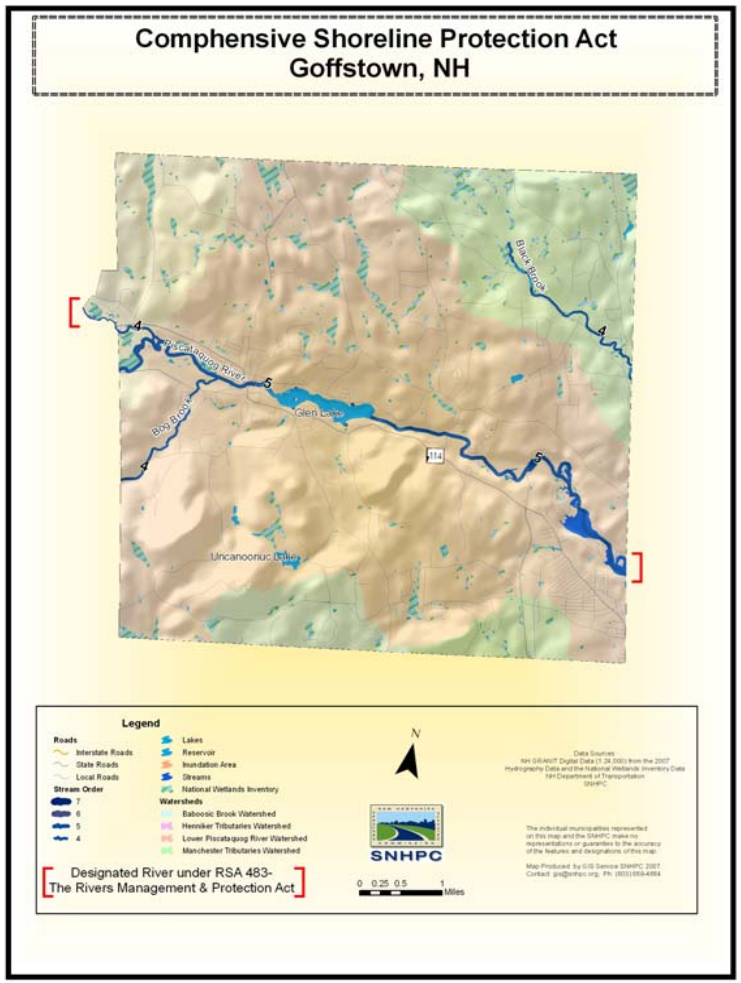
Option 1: Rely solely on the state's CSPA; or

Option 2: Extend the protection of the CSPA to the surface water bodies not covered under the CSPA; or

Option 3: Adopt more stringent regulations than the CSPA

*This model ordinance is designed to implement Option 3 as it includes provisions to protect **lower order streams** and expands upon the buffer requirements established by the CSPA.*

Where does the CSPA apply in your community?



CSPA applies to tidal ponds, all lakes and ponds on the NH DES Official List of Public Waters and > 4th Order Streams within your community

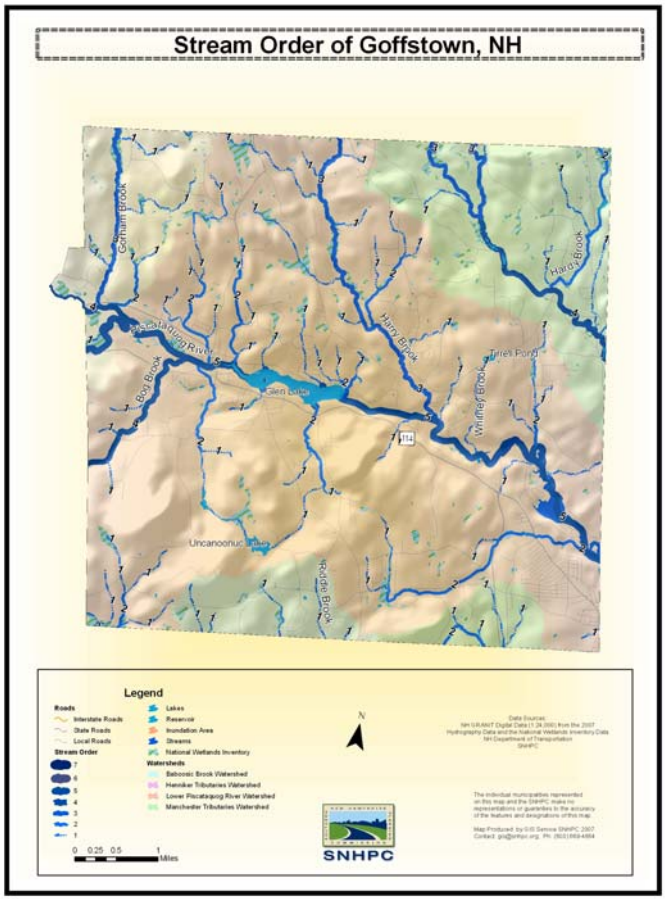
Contact NH DES Shoreland Protection or regional planning commission to prepare a map of the CSPA for your community

DES Official List of Public Waters: http://www.des.state.nh.us/Dam/DamRemoval/List_of_Public_Waters.pdf

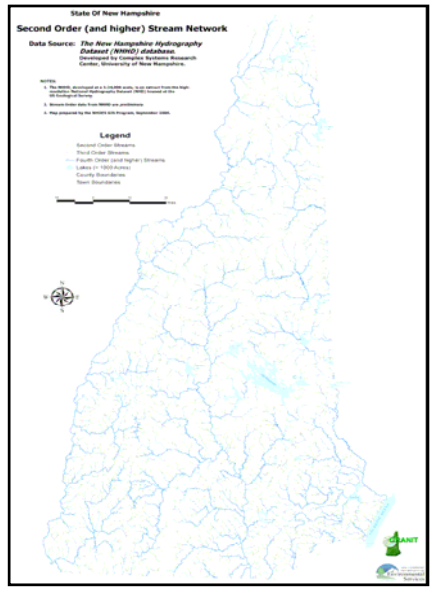
Three Basic Elements of Model Ordinance

- **Shoreland Protection Overlay District**
  (Shown on an Official Shoreland Zoning Map)
- **Shoreland Protection District Regulations**
- **Riparian Buffer Standards**

1st Step: Preparing Your Official Shoreland Zoning Map



Reliable source of stream location and stream order (1st, 2nd, 3rd, 4th, etc.) in your community is available from the NH DES Hydrography Dataset (NHHD) at GRANIT



Challenges: **<u>Defining 1st Order Streams</u>**

This Model Ordinance applies to both ***intermittent*** and ***perennial*** – communities may only wish to include perennial streams – if so; definition of 1st order streams will need changed and revisions to NHDD data will be required

2nd Step: Mapping Your Shoreland Protection District

Shoreland Protection District Boundaries:

- Applies to both sides of 1st, 2nd, 3rd and 4th order and higher streams and rivers and all natural or impounded lakes, ponds and coastal estuaries (if applicable) within your community
- **150** feet from the "reference line" of 1st and 2nd order streams
- **250** feet from the "reference line" all other water bodies
- The reference line used is the same as defined in the CSPA
- Does not apply to wetlands, ephemeral streams, beaver impoundments, fire ponds and farms

3rd Step: Apply Shoreland District Regulations: Key Provisions

Setbacks/Lot Coverage:

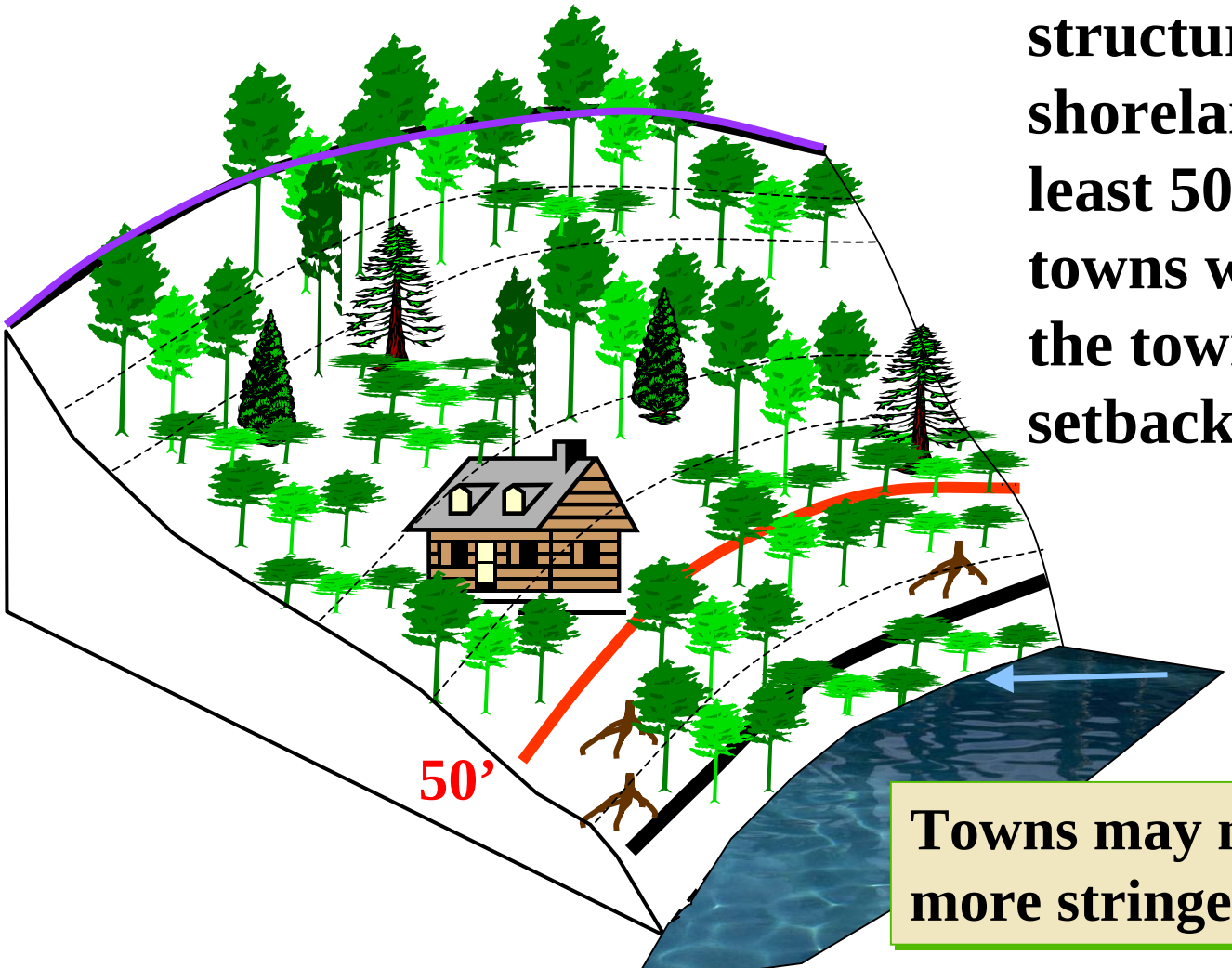
- **25 foot for primary structures** - 1st & 2nd order streams
- **50 foot for all other water bodies**
- **20 percent impervious surface limitation** for portion of any lot located within the Shoreland Protection District

  Note: municipalities can also consider a 10 percent impervious limitation as recent studies indicate a level between 7 and 14 percent impervious at which water quality and wildlife habitat become affected by stormwater runoff

- Utilize a **Conditional Use Permit** for water-dependent structures such as docks, piers, breakwaters, boathouses, marinas, etc.
- Require a **Stormwater Management Plan** for all earth moving activities on lots greater than 1 acre
- Use a **Selected Clearing and Landscape Plan** to address scenic views and protection of buffer

CSPA: Primary Building Setback

The setback for primary structures to protected shoreland shall be at least 50 feet in all towns whether or not the town had its own setback before 2002.

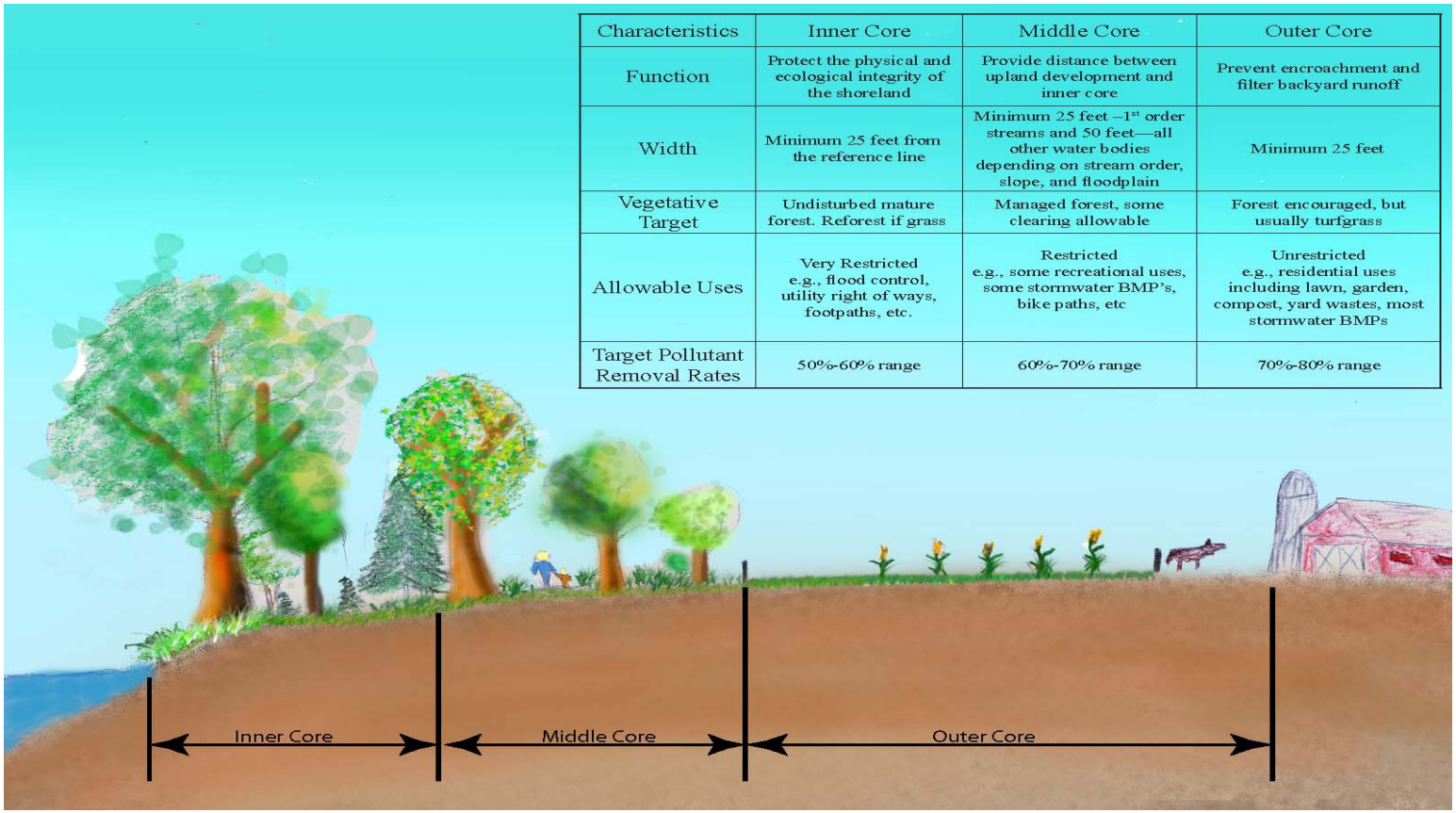


Towns may maintain or enact more stringent setbacks.

4th Step: Establish Riparian Buffer Standards

Utilize Management Zone Concept to Protect Water Quality and Manage Land Use

Characteristics	Inner Core	Middle Core	Outer Core
Function	Protect the physical and ecological integrity of the shoreland	Provide distance between upland development and inner core	Prevent encroachment and filter backyard runoff
Width	Minimum 25 feet from the reference line	Minimum 25 feet –1st order streams and 50 feet—all other water bodies depending on stream order, slope, and floodplain	Minimum 25 feet
Vegetative Target	Undisturbed mature forest. Reforest if grass	Managed forest, some clearing allowable	Forest encouraged, but usually turfgrass
Allowable Uses	Very Restricted e.g., flood control, utility right of ways, footpaths, etc.	Restricted e.g., some recreational uses, some stormwater BMP's, bike paths, etc	Unrestricted e.g., residential uses including lawn, garden, compost, yard wastes, most stormwater BMPs
Target Pollutant Removal Rates	50%-60% range	60%-70% range	70%-80% range



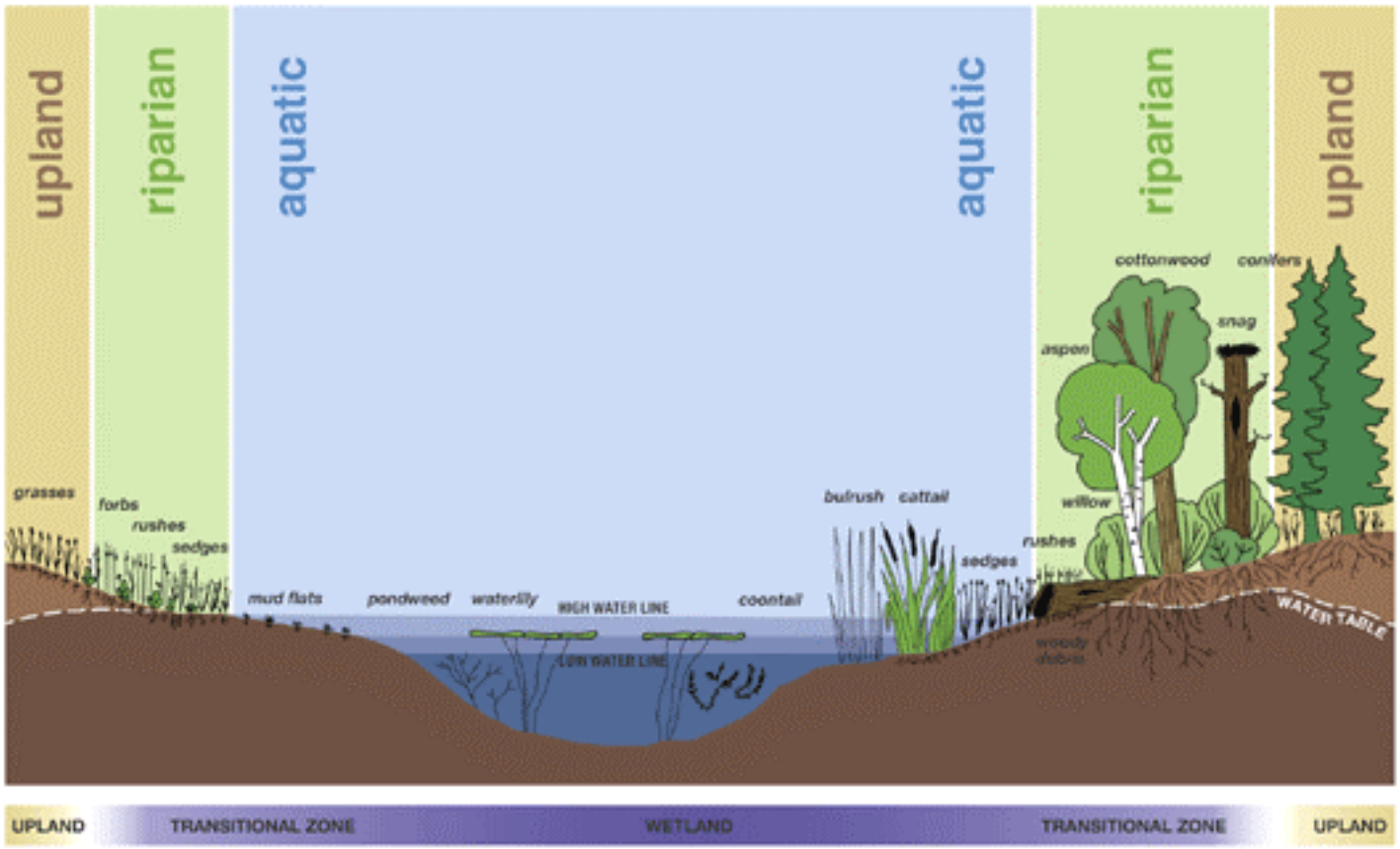
(modeled after the Center for Watershed Protection's Buffer Model Ordinance and Journal of Watershed Protection Techniques)

Wetlands Protection

Wetlands Defined

- Wetlands:
  - RSA 482-A:2.X – Area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated conditions

Wetlands & Uplands



Source: DU CA

Benefits of Wetlands & Uplands

- **Habitat** – food, shelter, nurseries
- **Economics** – $71 million, +1,400 jobs
- **Protect water quality** – bind pollutants, buffer surface water, allow groundwater recharge
- **Reduce floods** – nature’s sponge

Wetlands Conservation Overlay District

- Review potential impacts to wetlands & uplands regardless of size
- Prevent **Cumulative Impacts**
- Prevent impacts to flooding, aquifers, water supplies
- Protect functions of ecosystem

Vegetated Wetland Buffers

- Buffer size to protect wetlands depends on function & site conditions
  - 100’ = most contaminants & nutrients are removed
  - Wildlife supporting buffers larger

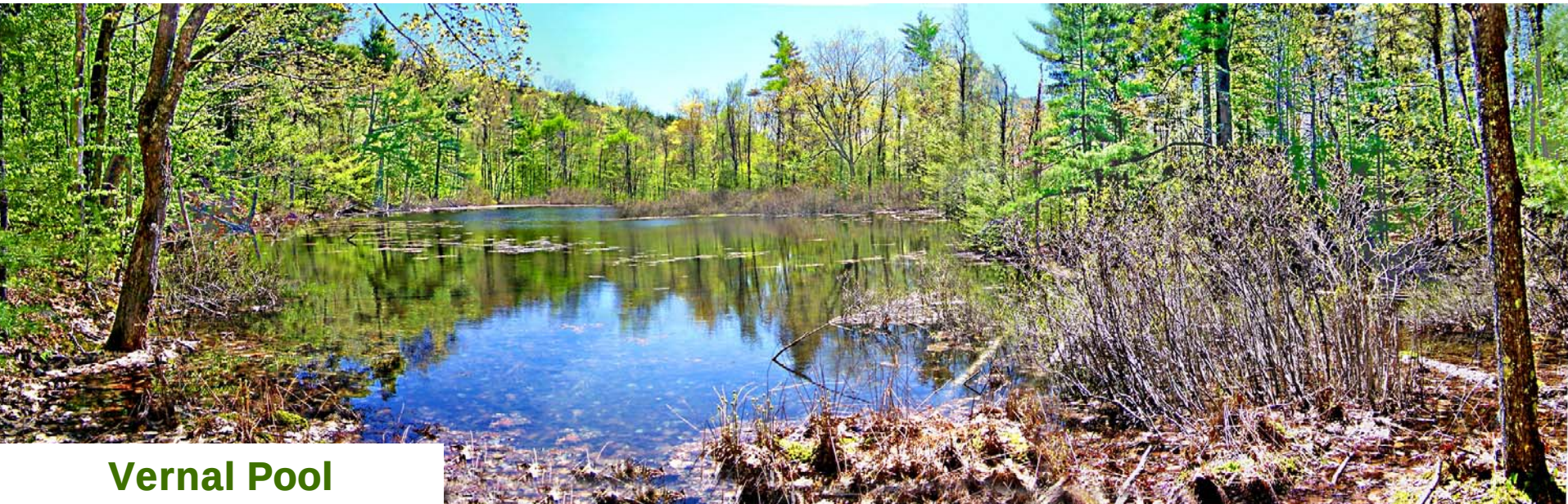
↑ Buffer = ↑ Water Quality

Vegetated Buffers

- Tiered Approach to Land Uses
  - 100’ buffer allows agriculture, forestry, passive recreation – but no structures
  - 25’ buffer – no vegetation removal
- Type of Wetland
  - 50’ buffer around all wetlands
  - 100’ buffer around peatlands or bogs or Prime Wetlands

Buffer Thresholds

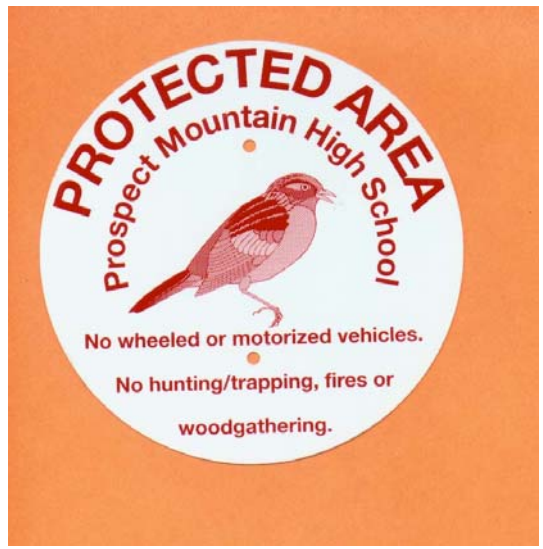
- May want to limit the applicability to larger wetlands for administrative efficiency
  - Wetlands of any size adjacent to surface water
  - Vernal pools over 500 square feet
  - All wetlands over 1,000 square feet



Vernal Pool

Local Considerations

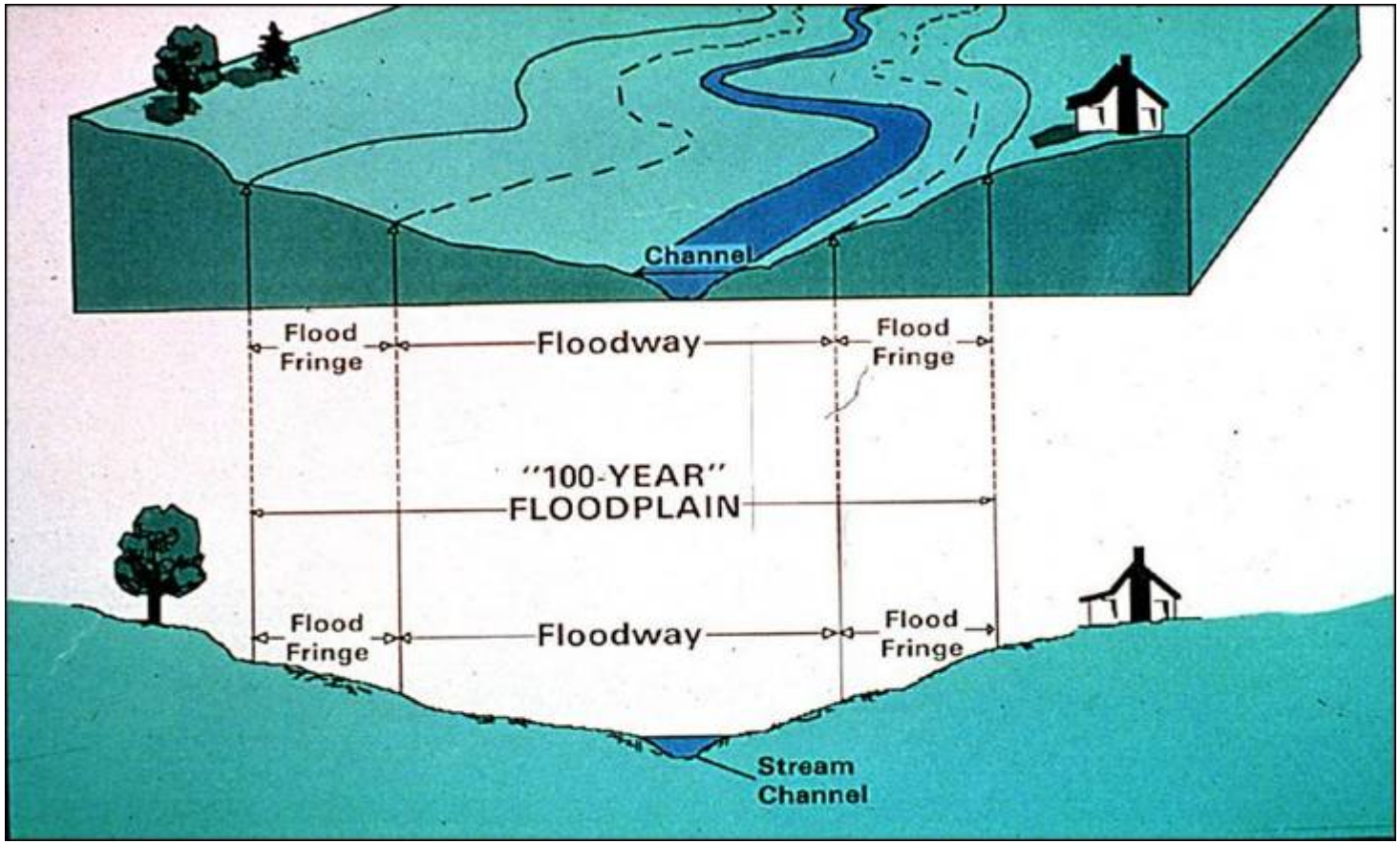
- Review the DES Wetlands rules before proceeding with ordinance (Env-Wt 100-800)
- Ability to Implement & Enforce Ordinance
- Important to have a good Wetlands Map
  - National Wetlands Inventory
  - Soils Maps
- Tags to mark the Buffers



Flood Hazard Area Zoning

- Protecting residents and property from floods through the prevention of adverse impacts from development in the floodplain.

Flood Hazard Area = 100 yr Floodplain



Defined – Land in the floodplain subject to a ≥ 1% possibility of flooding in a given year.

Costs of Flooding

- Emergency Response
- Infrastructure
- Property loss
- Loss of tax revenue
- Loss of Business
- Loss of life

Flood Hazard Area

- NFIP – National Flood Insurance Program
  - Municipality must adopt NFIP regulations to qualify for insurance program
  - Minimum Standards
  - Standards for residential structures to be elevated or above 100 yr flood elevation

NFIP Limitations

- False sense of security
- Can increase damage to neighboring properties and/or downstream communities
- Allows development that causes floodplain expansion
- Does not account for **Cumulative Impacts of Development**
- Does not account for **public costs & risks**


New Hampton 2008

Flood Planning Balance

- Historical development with prevention of impacts from development
- Comprehensive approach to Hazard Mitigation and Watershed Management
- Public Safety with Landowner Needs


New Hampton 2008
08/08/2008

Flood Hazard Overlay District

- Any community with NFIP mapped flood hazard areas
- Can be modified to create a flood hazard zone
- Integrate regional Watershed Planning, HMPs, LEOPs
- Integrate with Stormwater Management & Erosion Control provisions

Goal = No Adverse Impact

- Implement “Higher Requirements”
  - Compensatory Storage
  - Understand the NFIP Floodplain Maps – not all inclusive
  - FEMA Community Rating System (CRS) program provides incentives to go beyond minimum NFIP requirements

$$ vs. Size

- Additions and other Substantial Improvements
  - allows substantial improvements not involving additions as permitted uses
  - requires a Special Exception for additions to ensure that there is no increased encroachment in the floodplain, or that if there is, compensatory storage is created

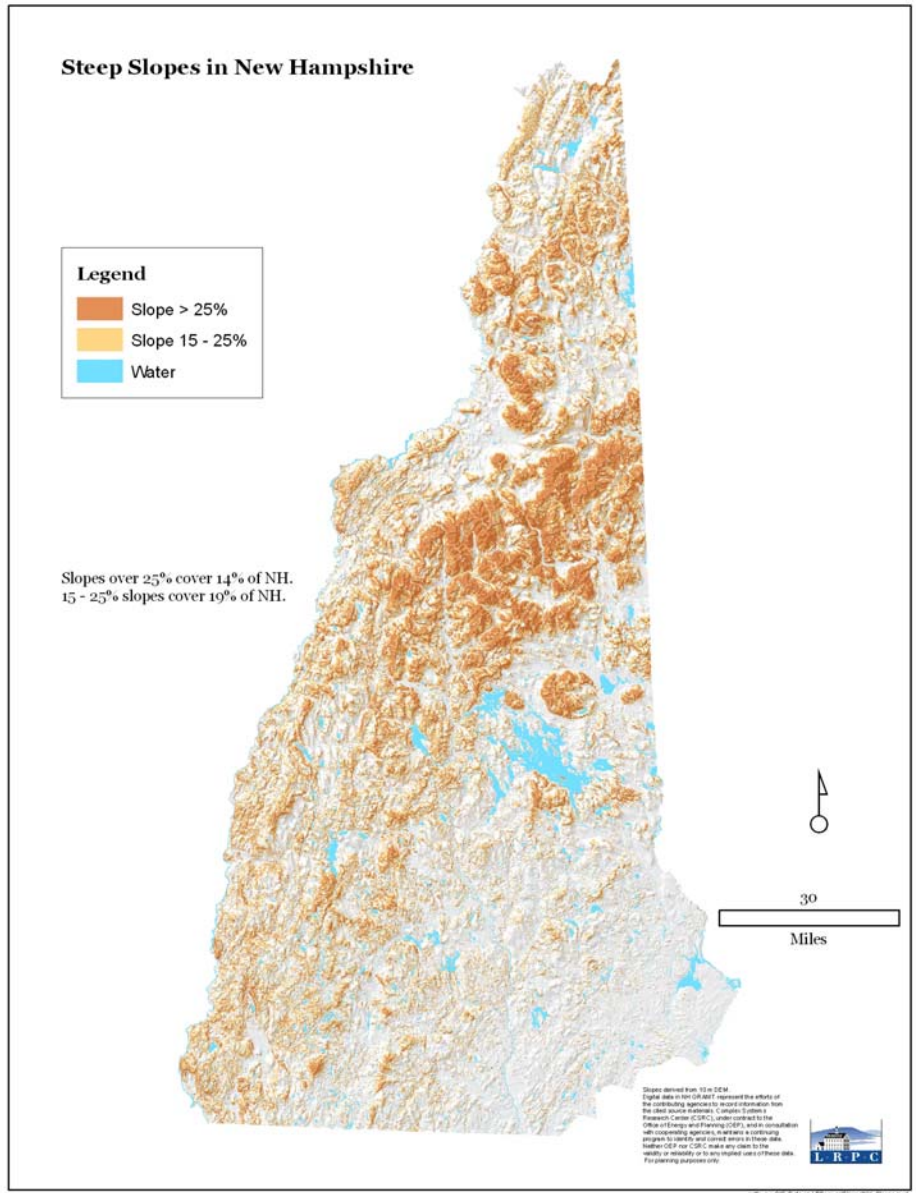
Local Considerations

- Can remove NFIP language if not in program
- Can incorporate NFIP if want to join program
- RPC staff can assist municipalities
- Contact NFIP state coordinator to review ordinance for compliance

Steep Slopes Ordinance

Steep Slopes defined as a grade ≥ 15%*

* elevation change of 15’ over 100’ horizontal distance



Reasons to protect Steep Slopes & Ridgelines

- Health and Safety
- Infrastructure
- Aesthetics
- **Water Quality**

Steep Slopes Model

Reduces impacts of hillside development

- Danger to public safety
- Expensive infrastructure
- Excessive cuts and fills
- Unattractive slope scars
- Erosion and drainage problems
- Inaccessible to Emergency Response
- **Cumulative Impact of Development**

Framework for regulating Steep Slopes and Ridgelines

Ohlshansky Principles

1. Topography
2. **Slope Stability**
3. **Drainage & Erosion**
4. Infrastructure
5. Access
6. Aesthetics
7. Natural Qualities
8. Fire Hazard
9. Recreational Values
10. Open Space

Slope Stability

- Effect of grading
- Potential for erosion/landslides

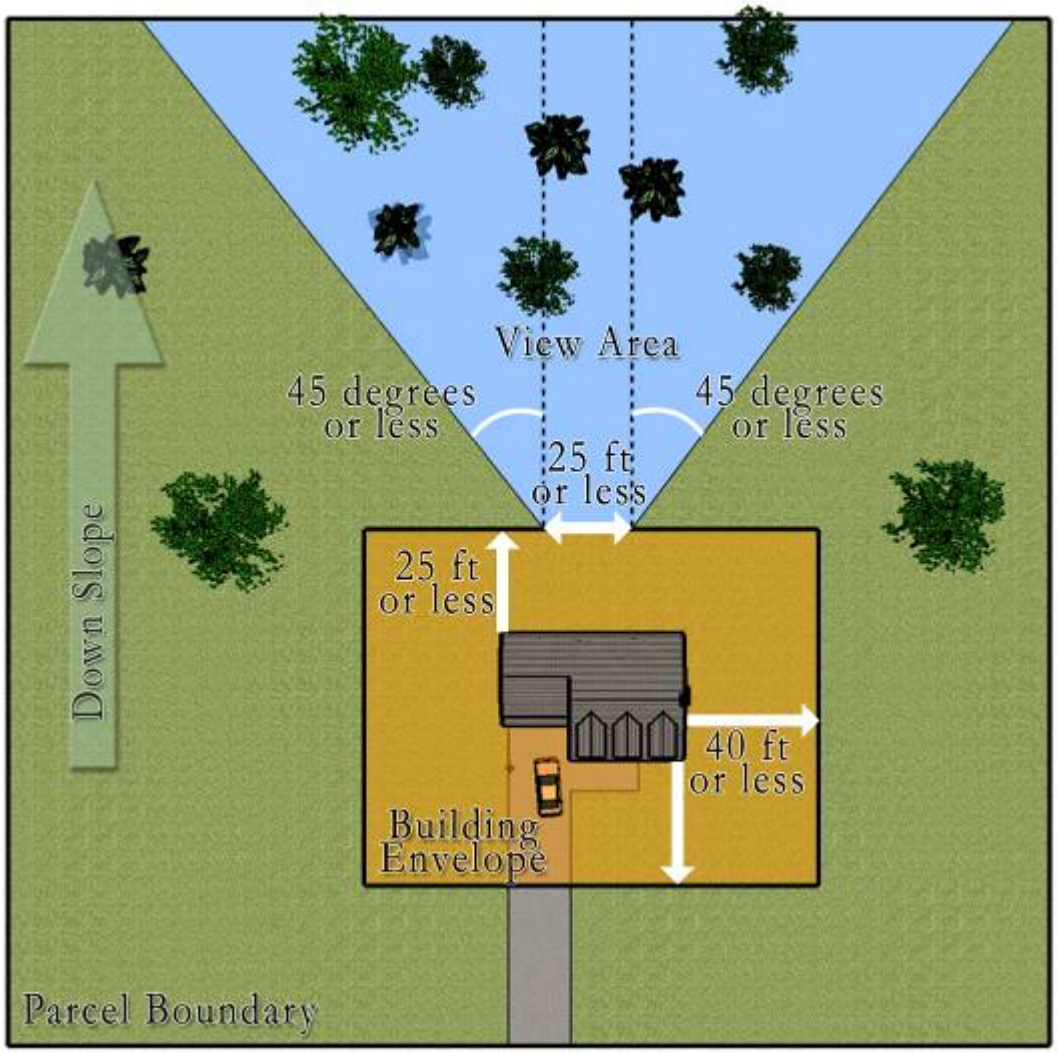
Drainage & Erosion

- Flood-prone areas
- Downstream structures
- Drainage patterns
- Soil types
- **Cumulative Impact of Development**

How to Proceed with Ordinance Development

- Form a committee
- Decide the terms best suited to your community
- Planning Board approval
- Public Hearing
- Present at Town Meeting

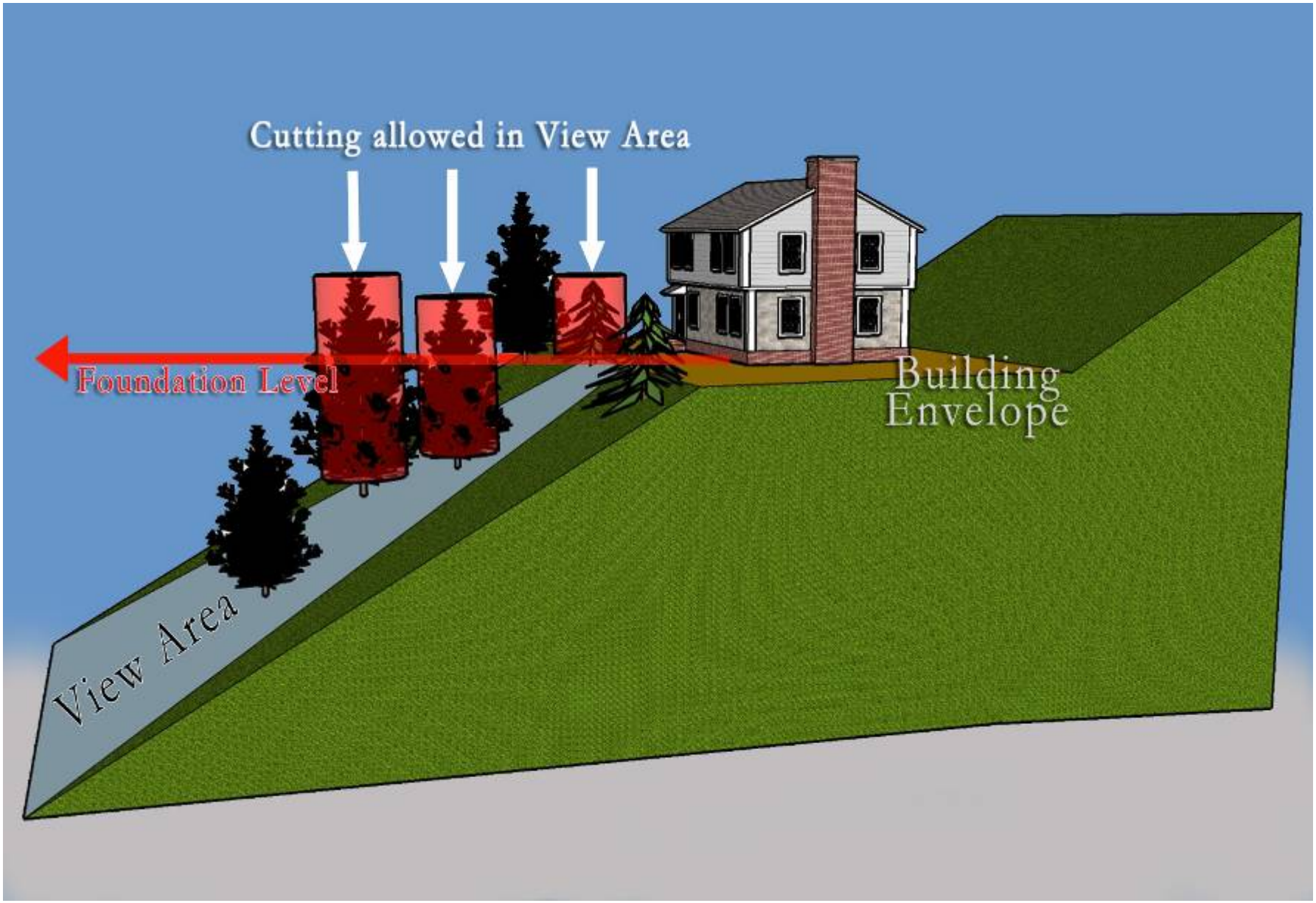
Steep Slopes Balance



Impacts of Development

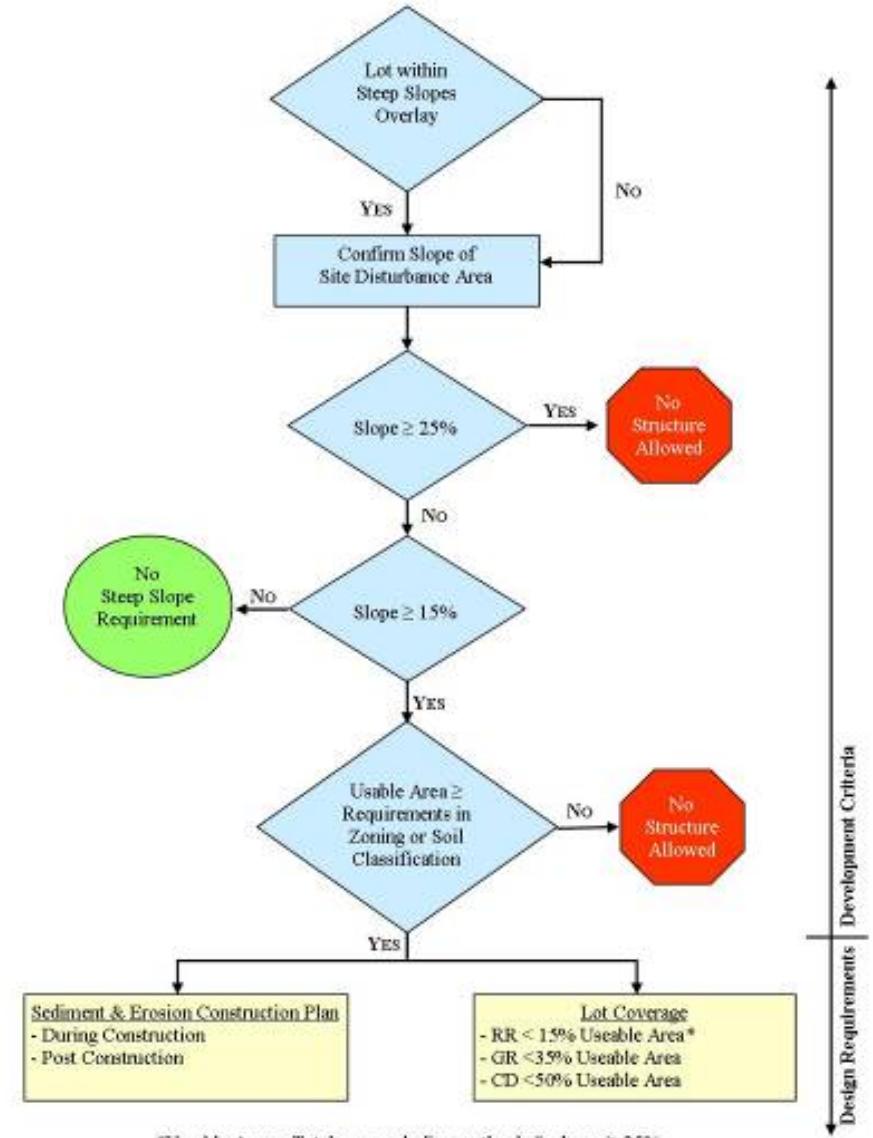
and

Landowner Needs


Cutting allowed in View Area
Foundation Level
Building Envelope
View Area

Steep Slopes Development Process & Design Requirements

Tool for Planning Boards and Applicants



*Useable Area = Total area excluding wetlands & slopes ≥ 25%

Model Subdivision & Site Plan Regulations for Erosion & Sediment Control During Construction

Purpose:

- Control quantity and quality of runoff
- Prevent soil erosion and sedimentation from site construction
- Prevent pollution of runoff
- Protect natural resources
- Protect other property from damages

Key Provisions

- Regulations apply to all land disturbance, development and/or any construction activities in all zoning districts > 20,000 sq.ft.
- Construction Inspections – engineering consultant/town engineer
- Phasing Plan – four step process:

Step 1, Planning – fit development to site

Step 2, Schedule of Operations – schedule grading to expose smallest land area/shortest amount of time

Step 3, Soil Erosion Control – apply BMPs

Step 4, Inspections and Maintenance

Design Objectives

- Minimize areas of disturbed soil
- Maximize protection and on-site vegetation
- Reduce soil exposure
- Stablize soil with seeding/mulch
- Control water at upslope perimeters
- Control water on-site
- Control sediment on-site
- Control sediment at down-slope perimeters
- Utilize biological or recyclable materials

Design Standards

- Alteration of Terrain Permits
- BMPs designed/installed – post development peak rate does not exceed pre-development rate – 2 and 25 yr and 24 hour storm event;
- Emergency spillways/down slope drainage – capacity for 100 yr/24-hr storm;
- All BMPs meet “Stormwater Management & Erosion & Control Handbook for Urban and Developing Areas in NH”
- Low Impact Development techniques preferred to intercept, treat and infiltrate runoff
- No discharge into surface waters, ground surface, subsurface, or groundwater with 100 ft. of surface water or water supply intake protection areas;

Other Requirements

Responsibilities of Applicants:

- Construction Site Methods – daily log, detailed estimates – unit pricing, inspections/testing, meetings, documentation, installation, certification and surety

- Stormwater Management Plan

- Stormwater Calculations

Questions?

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